

Application No. 10/023,256

Docket No. 2001U011.US

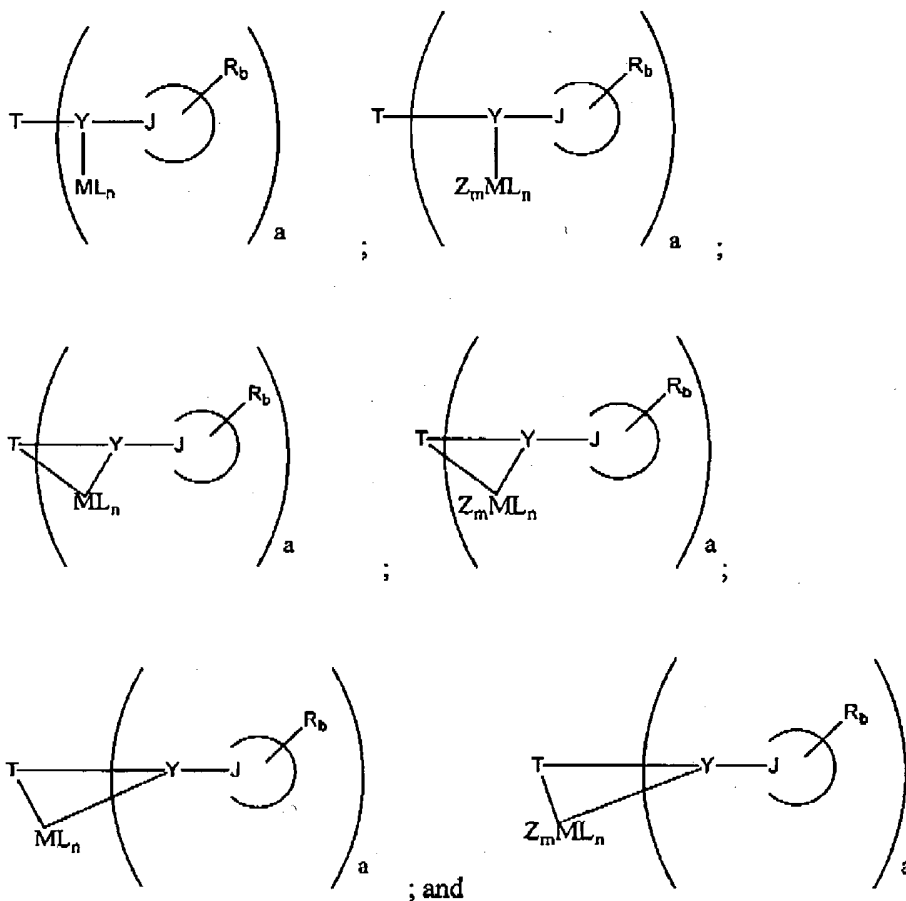
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Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A catalyst precursor represented by one of the formula selected from:



where a is an integer from 1 to 5;

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T is a chemical moiety having 1 to 100 atoms, which can include hydrogen when a is equal to 1, and is a bridging group that bridges the Y atoms when a is equal to 2 to 5;

M is a ~~metallie~~ an element selected from Groups 3 to 7 series of the Periodic Table of the Elements;

Z is a coordination ligand;

each L is a monovalent, bivalent, or trivalent anionic ligand;

n is an integer from 1 to 6;

m is an integer from 0 to 5;

Y is nitrogen;

J is a ~~heteroatom that is part of a ring structure and~~ is nitrogen; wherein the ring to which J is part of is a five or six member ring;

R can be independently hydrogen, or a non-bulky or a bulky substituent; and

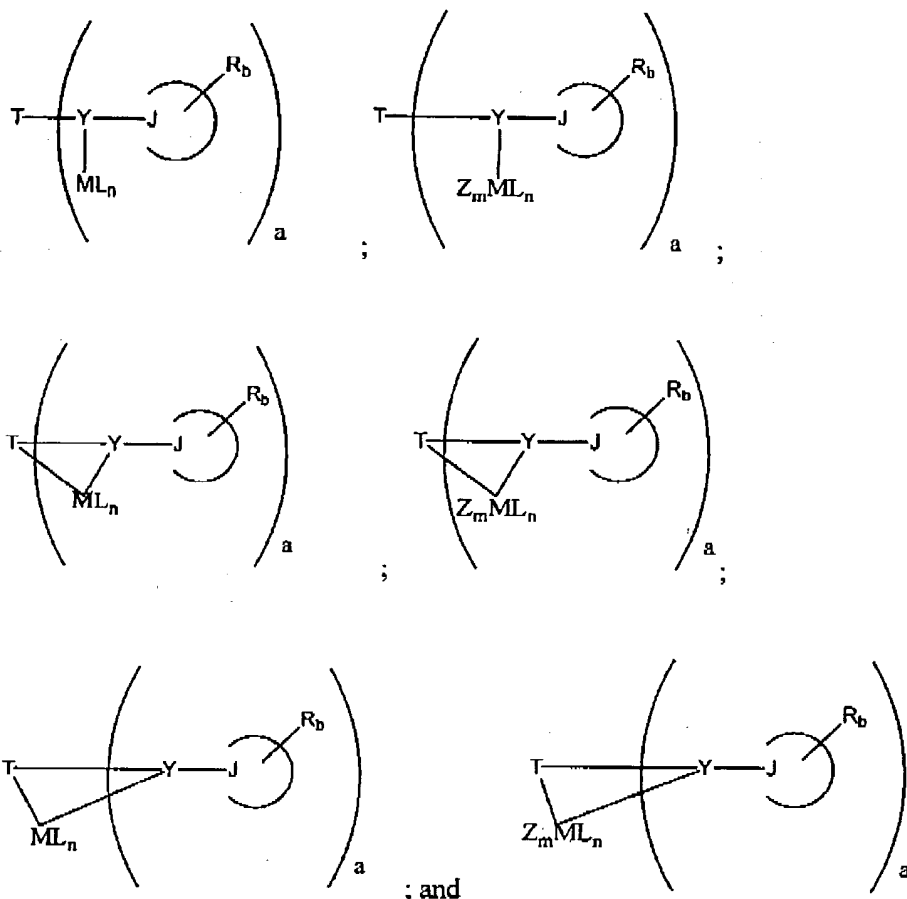
b is an integer from 0 to 20.

2. (Previously presented) The catalyst precursor of claim 1 wherein Z is selected from at least one of triphenylphosphine, tris(C₁-C₆ alkyl) phosphine, tricycloalkyl phosphine, diphenyl alkyl phosphine, dialkyl phenyl phosphine, trialkylamine, arylamine, a substituted or unsubstituted C₂ to C₂₀ alkene, an ester group, a C₁ to C₄ alkoxy group, an amine group, carboxylic acid, and di(C₁ to C₃) alkyl ether, an η^4 diene, tetrahydrofuran, and a nitrile.
3. (Original) The catalyst precursor of claim 1 wherein each L is an anionic ligand independently selected from those containing from about 1 to 50 non-hydrogen atoms and selected from the group comprised of halogen containing groups; hydrogen; alkyl; aryl; alkenyl; alkylaryl; arylalkyl; hydrocarboxy; amides, phosphides; sulfides; silyalkyls; diketones; borohydrides; and carboxylantes.
4. (Original) The catalyst precursor of claim 3 wherein each L is an anionic ligand independently selected from those containing from about 1 to 20 non-hydrogen atoms and selected from the alkyl, arylalkyl, and halogen containing groups.

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5. (Cancelled).
6. (Original) The catalyst precursor of claim 5 wherein M is selected from Hf and Zr.
7. (Cancelled).
8. (Cancelled).
9. (Original) The catalyst precursor of claim 1 wherein R is a non-bulky substituent selected from straight and branched chain alkyl groups.
10. (Original) The catalyst precursor of claim 9 wherein R is a C₁ to C₁₀ straight chain alkyl group.
11. (Original) The catalyst precursor of claim 1 wherein R is a bulky substituent containing from about 3 to 50 non-hydrogen atoms and be selected from alkyl, alkenyl, cycloalkyl, heterocyclic (both heteroalkyl and heteroaryl), alkylaryl, arylalkyl, polymeric, and inorganic ring moieties.
12. (Original) The catalyst precursor of claim 11 wherein R contains from about 4 to 20 non-hydrogen atoms.
13. (Cancelled)
14. (Currently amended) A catalyst composition comprised of:
 - a) a catalyst precursor represented by one of the formulae selected from:

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where ~~a is an integer from 1 to 5;~~

T is a chemical moiety having 1 to 100 atoms, which can include hydrogen when a is equal to 1, and is a bridging group that bridges the Y atoms when a is equal to 2 to 5;

M is ~~a metallic~~ an element selected from Groups 3 to 7 series of the Periodic Table of the Elements;

Z is a coordination ligand;

each L is a monovalent, bivalent, or trivalent anionic ligand;

n is an integer from 1 to 6;

m is an integer from 0 to 5;

Y is nitrogen;

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J is a ~~heteroatom that is part of a ring structure and is~~ nitrogen; wherein the ring to which J is part of is a five or six member ring;

R can be independently hydrogen, or a non-bulky or a bulky substituent; and

b is an integer from 0 to 20; and

b) an activating cocatalyst.

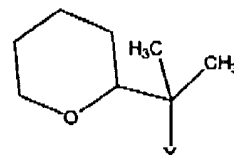
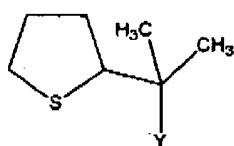
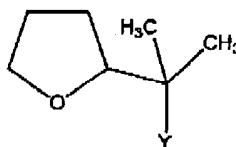
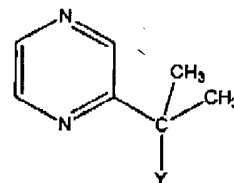
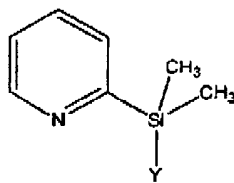
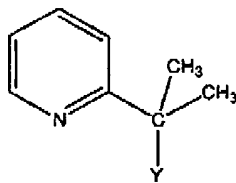
15. (Previously presented) The catalyst composition of claim 14 wherein Z is selected from at least one of triphenylphosphine, tris(C₁-C₆ alkyl) phosphine, tricycloalkyl phosphine, diphenyl alkyl phosphine, dialkyl phenyl phosphine, trialkylamine, arylamine, a substituted or unsubstituted C₂ to C₂₀ alkene, an ester group, a C₁ to C₄ alkoxy group, an amine group, carboxylic acid, and di(C₁ to C₃) alkyl ether, an η^4 diene, tetrahydrofuran, and a nitrile.
16. (Original) The catalyst composition of claim 14 wherein each L is an anionic ligand independently selected from those containing from about 1 to 50 non-hydrogen atoms and selected from the group comprised of halogen containing groups; hydrogen; alkyl; aryl; alkenyl; alkylaryl; arylalkyl; hydrocarboxy; amides, phosphides; sulfides; silyalkyls; diketones; borohydrides; and carboxylantes.
17. (Original) The catalyst composition of claim 16 wherein each L is an anionic ligand independently selected from those containing from about 1 to 20 non-hydrogen atoms and selected from the alkyl, arylalkyl, and halogen containing groups.
18. (Cancelled).
19. (Original) The catalyst composition of claim 18 wherein M is selected from Hf and Zr.
20. (Cancelled).
21. (Cancelled)

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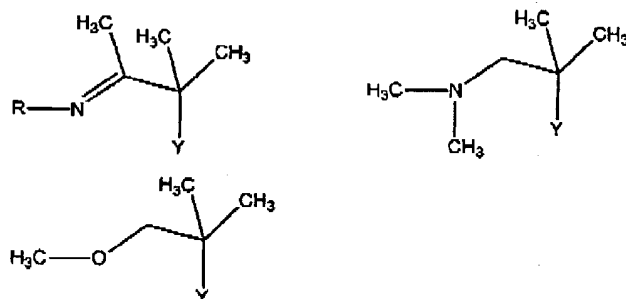
22. (Original) The catalyst composition of claim 14 wherein R is a non-bulky substituent selected from straight and branched chain alkyl groups.
23. (Original) The catalyst composition of claim 22 wherein R is a C₁ to C₁₀ straight chain alkyl group.
24. (Original) The catalyst composition of claim 14 wherein R is a bulky substituent containing from about 3 to 50 non-hydrogen atoms and be selected from alkyl, alkenyl, cycloalkyl, heterocyclic (both heteroalkyl and heteroaryl), alkylaryl, arylalkyl, polymeric, and inorganic ring moieties.
25. (Original) The catalyst composition of claim 14 wherein R contains from about 4 to 20 non-hydrogen atoms.
26. (Cancelled)
27. (Previously presented) The catalyst precursor of Claim 1, wherein a is 1 and T is selected from:



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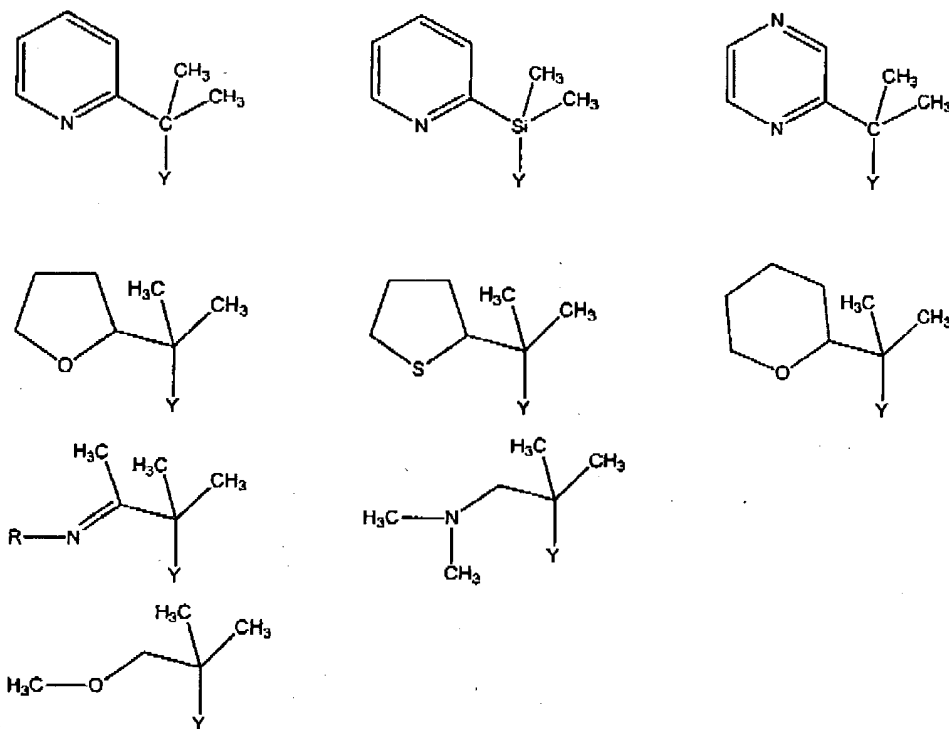
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wherein Y is shown for convenience.

28. (Previously presented) The catalyst composition of Claim 14, wherein a is 1 and T is selected from:



wherein Y is shown for convenience.